EXHIBIT 4

Wapp Tech Limited Partnership et al. v. JPMorgan Chase Bank, N.A., No. 4:23-cv-1137 (E.D. Tex.)

EXHIBIT B-4c

Invalidity of U.S. Patent No. 9,298,864 Based on the Flash MX Professional 2004 System

As described in the following claim chart, claims 1, 8, 13, 14, and 17 of U.S. Patent No. 9,298,864 (the '864 patent) are invalid because they are anticipated under 35 U.S.C. § 102 by Flash MX Professional 2004 and/or would have been obvious under 35 U.S.C. § 103 over Flash MX Professional 2004 and/or the knowledge of a person of ordinary skill in the art ("POSA").

The Flash MX Professional 2004 software product was publicly released by Macromedia, Inc., no later than September 10, 2003. Manuals and other publications describing Flash MX Professional 2004 were concurrently available. The i-mode HTML Simulator feature was concurrently available, and instructions for downloading and using the feature were concurrently available and provided with Flash MX Professional 2004. A software update for Flash MX Professional 2004, adding Flash Lite 1.1 functionality, was publicly released by Macromedia, Inc., no later than June 26, 2004. Manuals and other publications describing Flash Lite 1.1 were concurrently available. Under the EDTX Model Order Focusing Patent Claims and Prior Art to Reduce Costs, "associated references that describe that instrumentality shall count as one reference, as shall the closely related work of a single prior artist." (EDTX Model Order Focusing Patent Claims and Prior Art to Reduce Costs, at 1 n.1.) The following associated references all describe the Flash MX Professional 2004 instrumentality and, therefore, together with the software product itself collectively count as one reference ("Flash MX Professional 2004 system" or "Flash MX Professional 2004"):

- *Flash MX 2004 Using Flash*, copyright Macromedia, Inc., dated September 2003, provided with the software product and concurrently published at http://www.macromedia.com/support/documentation/en/flash/ ;
- *Flash MX 2004 Getting Started with Flash*, copyright Macromedia, Inc., dated September 2003, provided with the software product and concurrently published at http://www.macromedia.com/support/documentation/en/flash/ ;
- *Flash MX Professional 2004 Flash Lite Authoring Guidelines for the i-mode Service by NTT DoCoMo*, copyright Macromedia, Inc., dated March 2003, provided with the software product and concurrently published at http://www.macromedia.com/support/documentation/en/flash/ ;
- *Flash MX Professional 2004 Flash Lite User Guide*, copyright Macromedia, Inc., dated August 2003, provided with the software product and concurrently published at http://www.macromedia.com/support/documentation/en/flash/ ;
- Bill Perry, *New Features for Mobile and Devices Developers in Macromedia Flash MX Professional 2004* ("Perry"), published by Macromedia, Inc., no later than September 9, 2003, concurrently with and on the same website as the software product;
- Matthew David, Building Great Flash MX Games ("David"), copyright date 2003;
- *Flash MX Professional 2004 Flash Lite 1.1 Authoring Guidelines*, copyright Macromedia, Inc., dated June 2004 and concurrently published at http://www.macromedia.com/support/documentation/en/flash/ .

Because the Flash MX Professional 2004 software product with its Flash Lite 1.1 update was released no later than June 2004, the Flash MX Professional 2004 system qualifies as prior art at least under pre-AIA 35 U.S.C. §§ 102(a) and (b) based on Wapp's earliest claimed priority date of June 10, 2005 (the date of Provisional Application No. 60/689,101). As set forth in Defendant's ("JPMC's") accompanying invalidity contention cover pleading, the Flash MX Professional 2004 system is prior art under pre-AIA 35 U.S.C. §§ 102(a) and (b) if it is determined that this asserted patent is entitled to a priority date of June 9, 2006 (the filing date of U.S. Patent App. No. 7,813,910). The Flash MX Professional 2004 system additionally qualifies as prior art at least under pre-AIA 35 U.S.C. § 102(f). The named inventor of the asserted patent admitted possessing prior knowledge of Flash and related technologies, including Flash Lite 1.1, Flash MX, Flash MX Professional 2004, and Studio 8, from Macromedia, Inc., as demonstrated in at least the Provisional Application No. 60/689,101 and U.S. Patent App. No. 7,813,910 and associated prior art disclosures, and in prior deposition testimony. Wapp also admits that the named inventor of the asserted patent possessed prior knowledge of Flash technology and in particular that the purported invention was a purported improvement on Macromedia's Flash development environment, as demonstrated at least in Wapp's response on May 8, 2024, to JPMC's interrogatory number 8.

To the extent the Flash MX Professional 2004 system does not expressly or inherently disclose one or more of the limitations of the claims, such limitations would have been obvious in view of the teachings of the Flash MX Professional 2004 system in combination with the knowledge of a POSA and/or one or more of the references identified in JPMC's Invalidity Contentions.

JPMC notes that obviousness analysis involves an expansive and flexible approach that takes into account the background knowledge, creativity, and common sense of a POSA. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418, 421 (2007). Accordingly, JPMC reserves the right to supplement these statements of obviousness based on further discovery and developments in this case, such as the Court's claim construction.

The chart below provides representative examples of where each element of each claim is found in the referenced prior art. Citations are meant to be exemplary, not exhaustive, and JPMC reserves the right to identify and discuss additional portions of the referenced prior art in support of its contentions and/or to rebut arguments made by Wapp. Citations to figures, drawings, tables, and the like include reference to any accompanying or related text. All internal cross references are meant to incorporate the cross-referenced material as if fully set forth therein.

Wapp's Infringement Contentions have not established that JPMC infringes any valid claim. Thus, JPMC's statements below should not be treated as an admission, implication, or suggestion that JPMC agrees with Wapp regarding either the scope, construction, or interpretation of any of the claims, or the infringement theories advanced by Wapp in its Infringement Contentions, including whether any claim satisfies 35 U.S.C. §§ 101 or 112. In certain cases, JPMC specified non-limiting examples of where its application of the prior art is based on Wapp's apparent application of the claim limitation in the Infringement Contentions. These statements are not

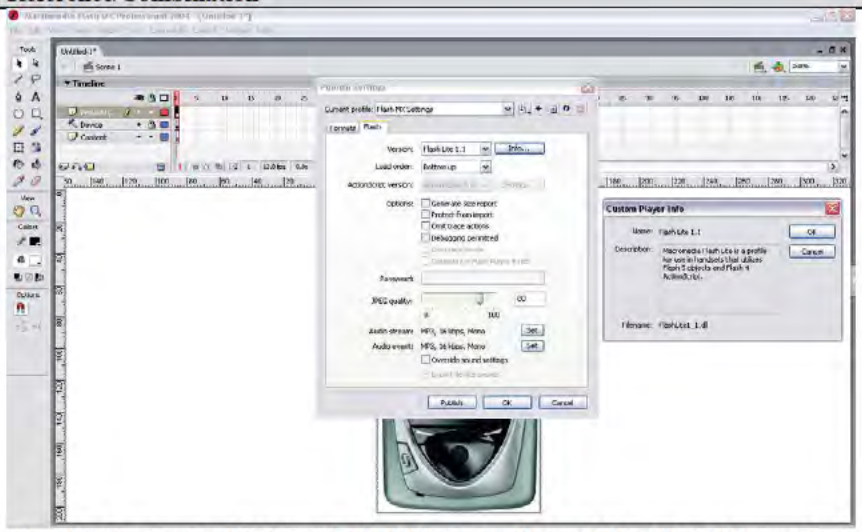
intended to suggest that JPMC agrees with Wapp's application of any claim term. The Court has not yet construed any disputed terms and, therefore, these invalidity contentions take into account all possible constructions. JPMC reserves the right to supplement these contentions after receiving the Court's claim construction or any Court ruling or change of position by Wapp on the priority dates to which Wapp is entitled.

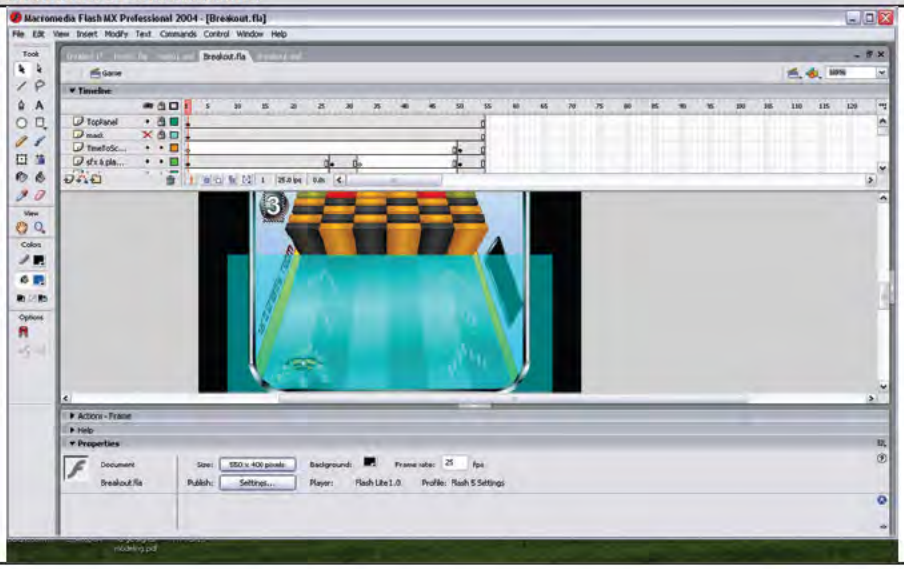
Wapp has yet to identify in this case, any limitation of the claims that it contends is not anticipated and/or rendered obvious by the referenced documents, and/or knowledge of a POSA. JPMC therefore expressly reserves the right to respond to any such contention, including by identifying additional obviousness citations and/or combinations, if Wapp makes any such contentions.

JPMC takes no position in these Invalidity Contentions on whether the preamble of each independent claim is limiting. To the extent each is limiting, the chart below provides examples of where each preamble limitation is found in this prior art.

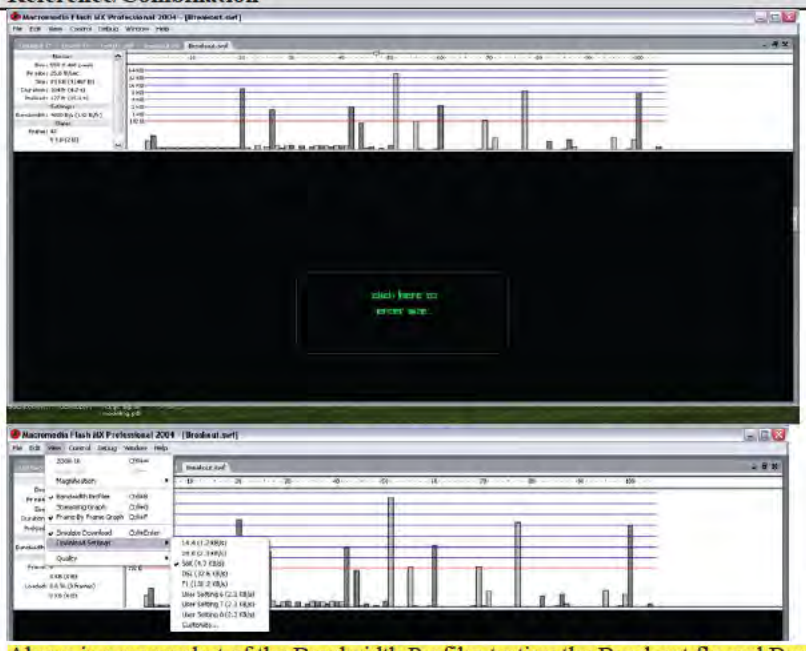
'864 patent

'864 Claim 1	Reference/Combination
1[a] A system for testing an application for a mobile device comprising:	The Flash MX Professional 2004 system discloses this limitation. For example, the following are screenshots from Flash MX Professional 2004. Flash MX Professional 2004, which consists of at least a stage for imagery and a grid for a timeline, enables a user to write code to develop and test visual applications such as animated games, using the Flash interface. Flash MX Professional 2004 also enables the editing and testing of ActionScript, a programming language. 

'864 Claim 1	Reference/Combination
	 Flash MX Professional 2004 with Flash Lite 1.1 update and NTT DoCoMo i-mode simulator 7.2 feature. Flash MX Professional 2004 is a system for developing and testing an application for a mobile device, and it can publish Flash applications to "handsets" (see above window entitled "Custom Player Info").

'864 Claim 1	Reference/Combination
	

'864 Claim 1	Reference/Combination



Above is a screenshot of the Bandwidth Profiler testing the Breakout.fla and Breakout.swf Flash application from Flash MX 2004 Games by Nik Lever.

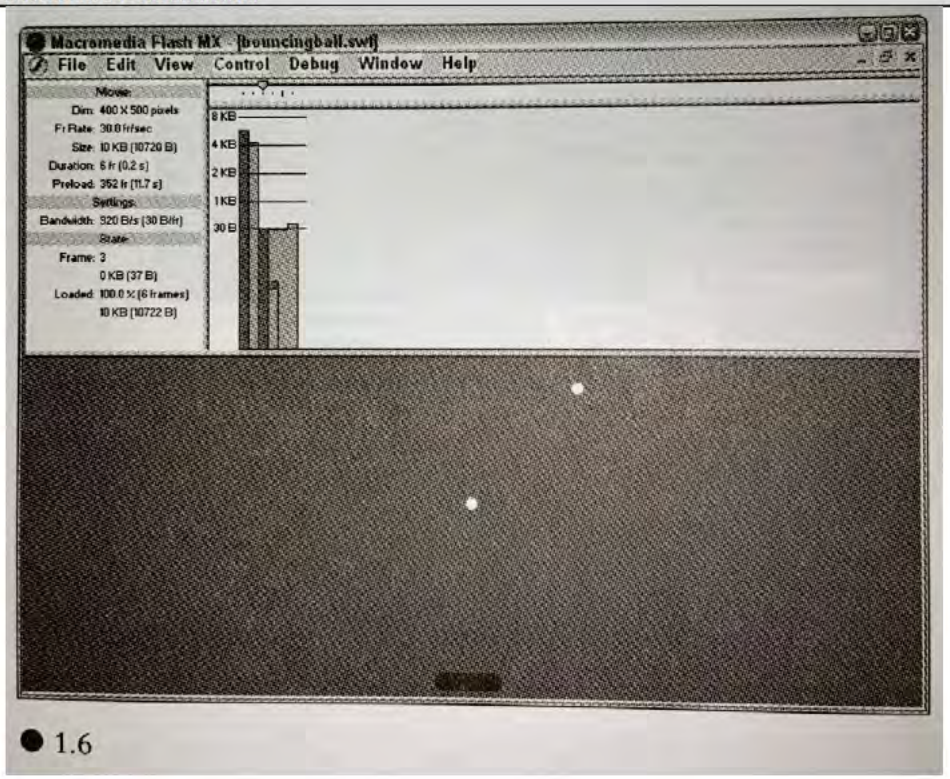
For example, Flash MX Professional 2004 includes a system for testing a Flash application for a mobile device.

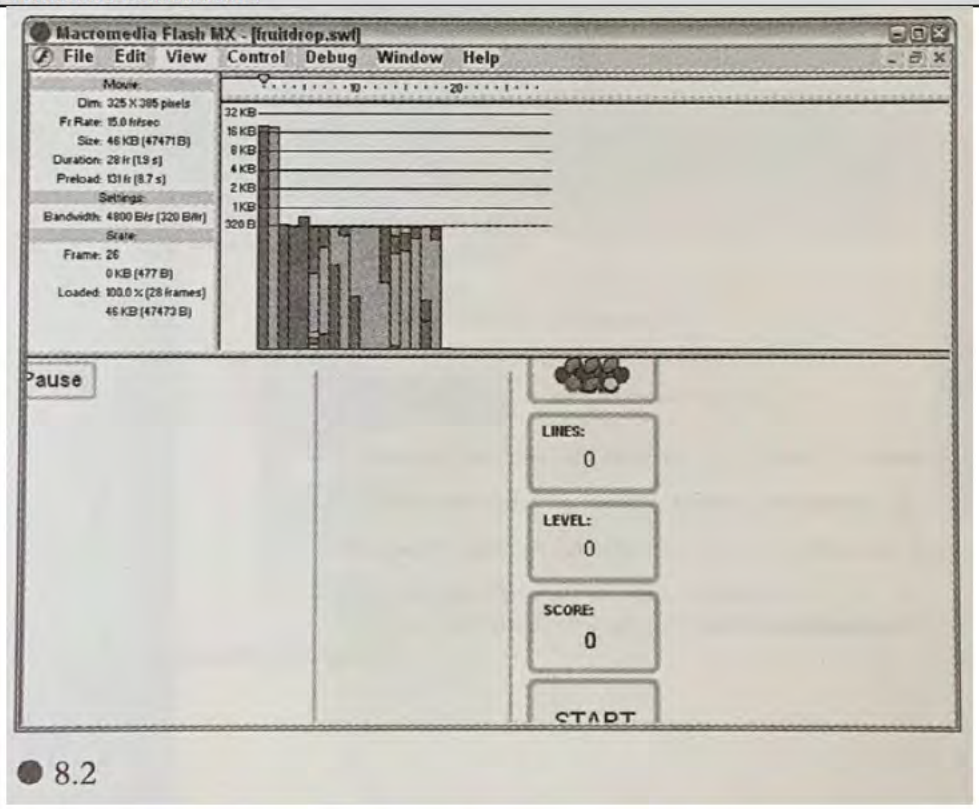
[*Flash MX 2004 Using Flash*, pp. 38–39]

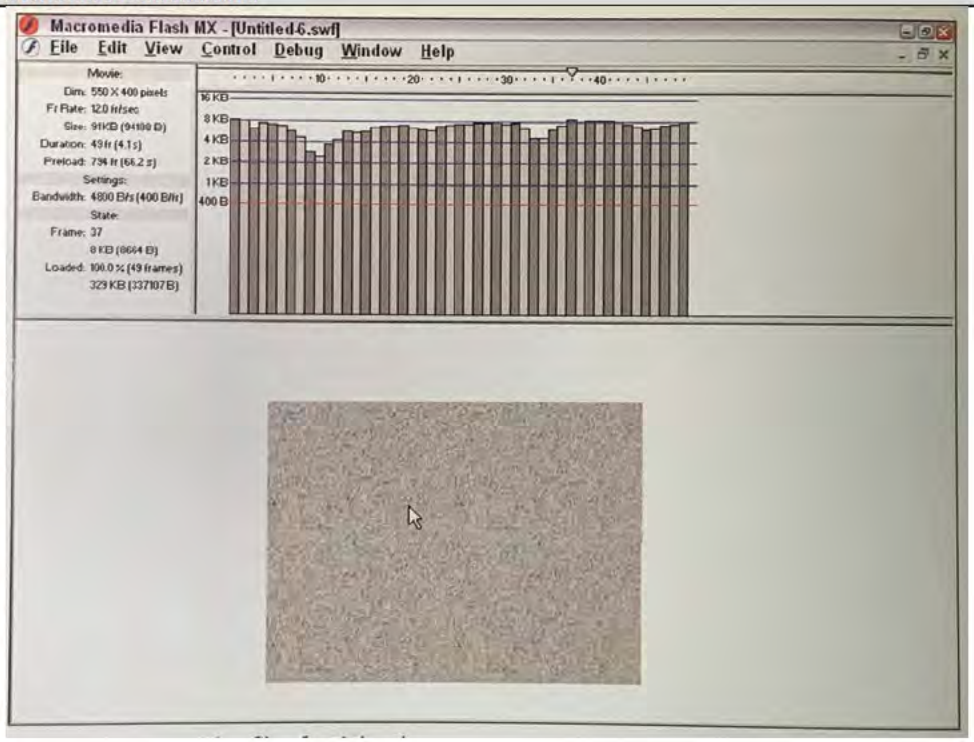
'864 Claim 1	Reference/Combination
	The Flash Player attempts to meet the frame rate you set; the actual frame rate during playback can vary on different computers. If a document that is downloading reaches a particular frame before the frame's required data has downloaded, the document pauses until the data arrives. [¶] To view downloading performance graphically, you can use the Bandwidth Profiler, which shows how much data is sent for each frame according to the modem speed you specify. The Bandwidth Profiler is divided into two panes. The left pane shows information about the document, the download settings, the state, and streams, if any are included. The right pane shows information about individual frames in the document. [¶] In simulating the downloading speed, Flash uses estimates of typical Internet performance, not the exact modem speed. For example, if you choose to simulate a modem speed of 28.8 Kbps, Flash sets the actual rate to 2.3 Kbps to reflect typical Internet performance. The profiler also compensates for the added compression support for SWF files, which reduces the file size and improves streaming performance. [¶] When external SWF files, GIF and XML files, and variables are streamed into a player by using ActionScript calls such as loadMovie and getUrl, the data flows at the rate set for streaming. The stream rate for the main SWF file is reduced based on the reduction of bandwidth caused by the additional data requests. It's helpful to test your document at each speed you intend to support, and on each computer you intend to support. This helps you ensure that the document doesn't overburden the slowest connection and computer it is designed for. [¶] You can also generate a report of frames that are slowing playback, and then optimize or eliminate some of the content in those frames. See "Optimizing Flash documents" on page 36. [¶] To change the settings for the SWF file created using the Test Movie and Test Scene commands, use File > Publish Settings. See "Publishing Flash documents" on page 281. [¶] To test download performance: [¶] Do one of the following: [¶] Select Control > Test Scene or Control > Test Movie. [¶] If you test a scene or document, Flash publishes the current selection as a SWF file using the settings in the Publish Settings dialog box. (See "Publishing Flash documents" on page 281.) The SWF file opens in a new window and begins playing immediately. [¶] Select File > Open, and select a SWF file. [¶]

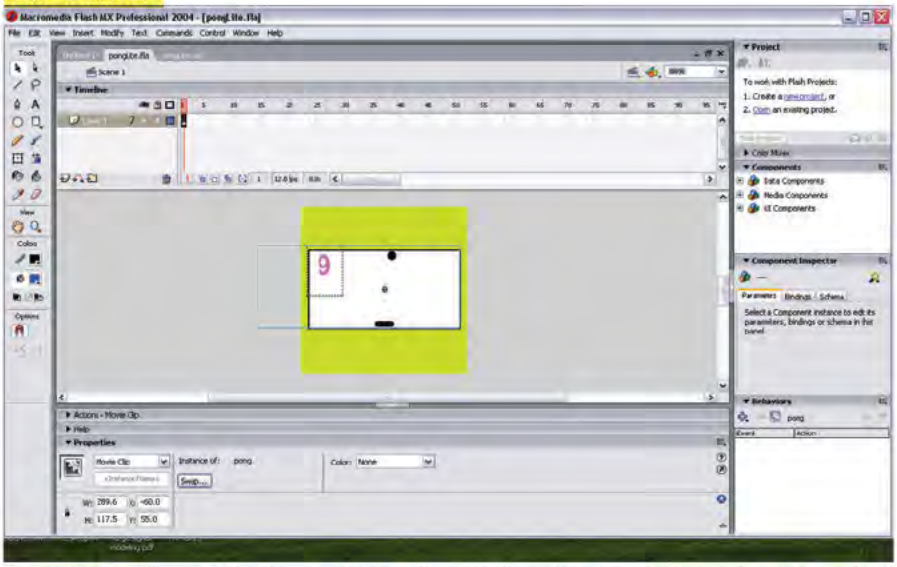
'864 Claim 1	Reference/Combination
	Select View > Download Settings, and select a download speed to determine the streaming rate that Flash simulates: 14.4 Kbps, 28.8 Kbps, 56 Kbps, DSL, T1 or a User Setting. To enter your your own User Setting, select Customize. [¶] When viewing the SWF file, select View > Bandwidth Profiler to display a graph of the downloading performance. [¶] The left side of the profiler displays information about the document, its settings, its state, and streams, if any are included in the document. [¶] The right section of the profiler shows the Timeline header and graph. In the graph, each bar represents an individual frame of the document. The size of the bar corresponds to that frame's size in bytes. The red line beneath the Timeline header indicates whether a given frame streams in real time with the current modem speed set in the Control menu. If a bar extends above the red line, the document must wait for that frame to load. [¶] Select View > Simulate Download to turn streaming off or on. [¶] If you turn streaming off, the document starts over without simulating a web connection. [¶] Click a bar on the graph to display settings for the corresponding frame in the left window and stop the document. [¶] If necessary, adjust the view of the graph: [¶] Select View > Streaming Graph to show which frames cause pauses. This default view displays alternating light and dark gray blocks representing each frame. The side of each block indicates its relative byte size. The first frame stores a symbol's contents, so it is often larger than other frames. [¶] Select View > Frame by Frame Graph to display the size of each frame. This view helps you see which frames contribute to streaming delays. If any frame block extends above the red line in the graph, the Flash Player halts playback until the entire frame downloads. [¶] Close the test window to return to the normal authoring environment. [¶] Once you've set up a test environment incorporating the Bandwidth Profiler, you can open any SWF file directly in test mode. The file opens in a Flash Player window, using the Bandwidth Profiler and other selected viewing options. [¶] For more information on debugging your documents, see "Writing and Debugging Scripts" in ActionScript Reference Guide Help. [¶]

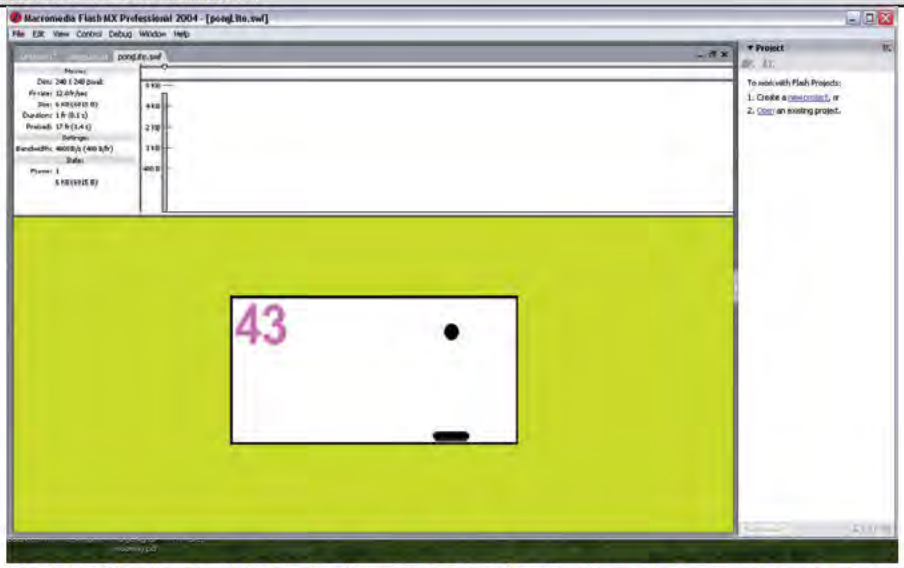
'864 Claim 1	Reference/Combination
	To generate a report listing the amount of data in the final Flash Player file: [¶] Select File > Publish Settings and click the Flash tab. [¶] Select Generate Size Report. [¶] Click Publish. [¶] Flash generates a text file with the extension .txt. (If the document file is myMovie.fla, the text file is myMovie Report.txt.) The report lists the size of each frame, shape, text, sound, video and ActionScript script by frame. [*Flash MX 2004 Using Flash*, p. 390] In addition, Flash files are compact, making them perfect for wireless carrier networks, where transfer rates range between 9.6 and 60 kilobytes per second (Kbps). Mobile devices, unlike desktop computers, have limited storage capability, so the small footprint of Flash is ideal. David discloses, via screenshots, the appearance of the Bandwidth Profiler. [David, p. 7]

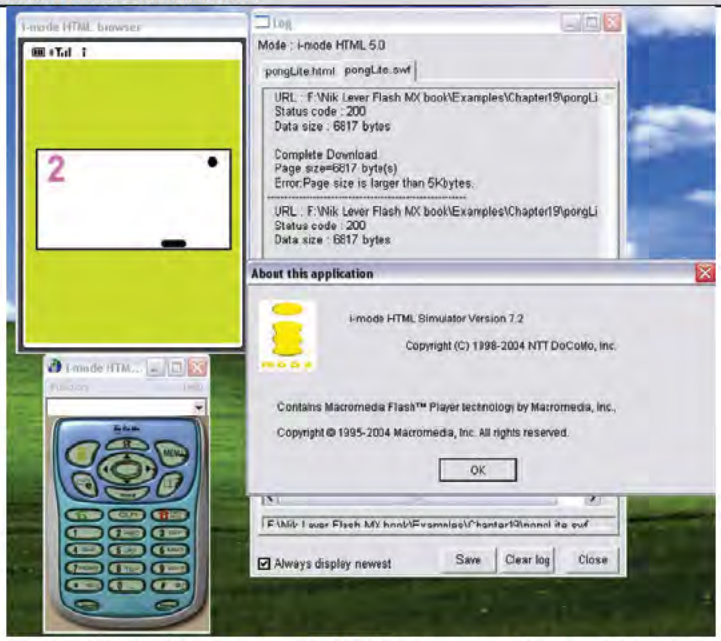
'864 Claim 1	Reference/Combination
	 [David, p. 98]

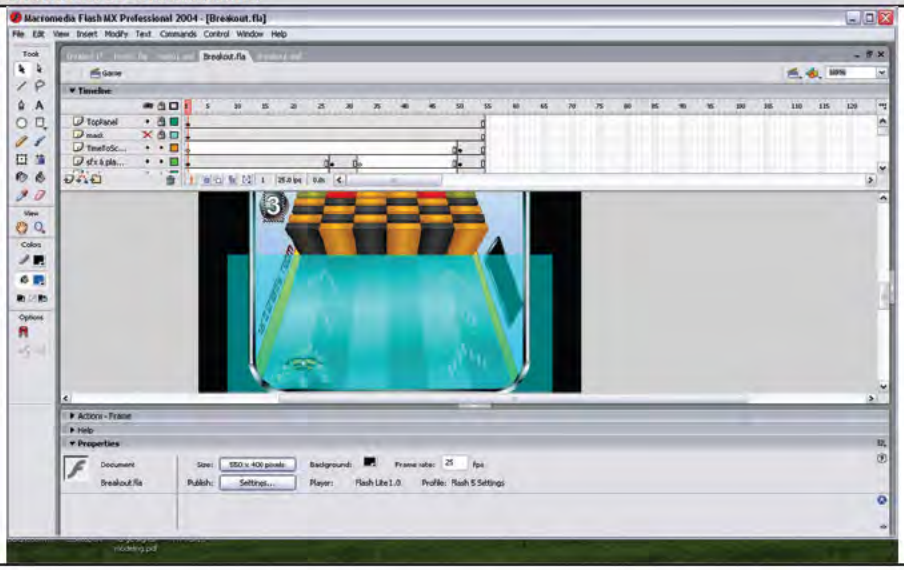
'864 Claim 1	Reference/Combination
	 [David, #18 of 32 unnumbered pages between pages numbered 192 and 193]

'864 Claim 1	Reference/Combination
	 To the extent this limitation is not explicitly disclosed by the Flash MX Professional 2004 system, it is inherent or would have been obvious to a POSA from the teachings of the Flash MX Professional 2004

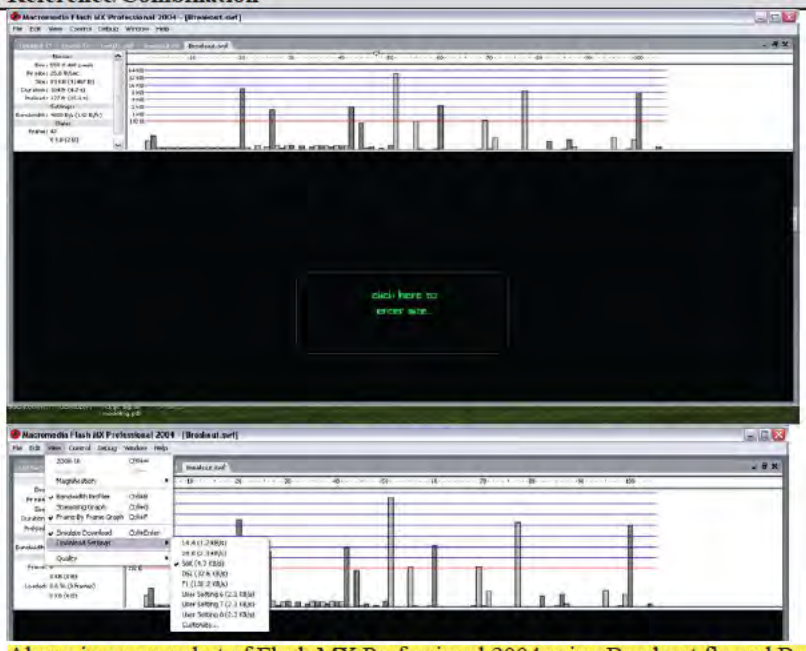
'864 Claim 1	Reference/Combination
	system, the knowledge of a POSA, and/or one or more of the references identified in JPMC's Invalidity Contentions.
1[b][1] software configured to simulate, via one or more profile display windows,	The Flash MX Professional 2004 system discloses this limitation. For example, Flash MX Professional 2004 simultaneously visually simulates a Flash application via one or more windows.  Flash MX Professional 2004 simultaneously visually simulates via the main editing window with the stage. Here, it is configured to emulate the pongLite.fla Flash application from Flash MX 2004 Games by Nik Lever.

'864 Claim 1	Reference/Combination
	 Flash MX Professional 2004 simultaneously visually simulates via the Test Movie window with the Bandwidth Profiler. Here, it is configured to emulate the pongLite.swf Flash application from Flash MX 2004 Games by Nik Lever.

'864 Claim 1	Reference/Combination
	 The NTT DoCoMo, Inc. i-mode HTML Simulator Version 7.2 loads and displays Flash Lite applications, such as pongLite.swf from Flash MX 2004 Games by Nik Lever, a game formatted for the screen of a mobile device (at left, with mobile device keypad below left).

'864 Claim 1	Reference/Combination
	

'864 Claim 1	Reference/Combination



Above is a screenshot of Flash MX Professional 2004 using Breakout.fla and Breakout.swf from Flash MX 2004 Games by Nik Lever.

For example, Flash MX Professional 2004 is software installed on the user's computer.

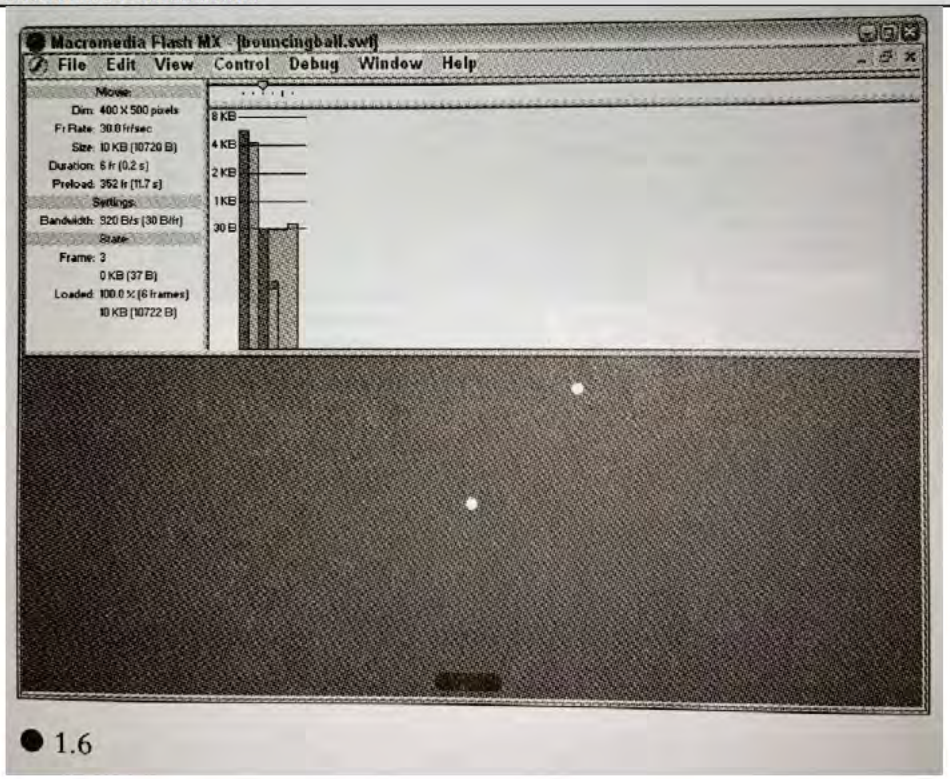
[*Flash MX 2004 Using Flash*, p. 178]
You can install the FLV Export plug-in after installation of Flash MX Professional 2004 is complete.

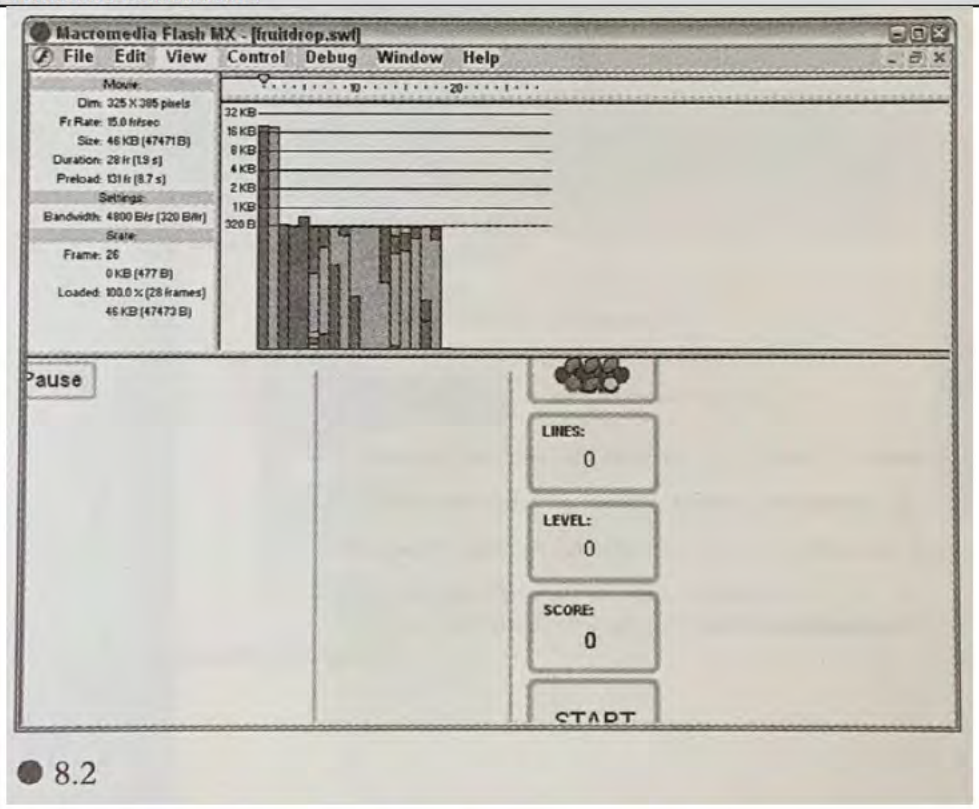
'864 Claim 1	Reference/Combination
	[*Flash MX 2004 Getting Started with Flash*, p. 16] Installing and activating Flash [¶] Installing Flash is an automated process. After installation, you can choose to run the 30-day trial mode of Flash, or you can choose to activate either Flash MX 2004 or Flash MX 2004 Professional. Both editions of Flash must be activated over the Internet or phone prior to use, and you need your serial number to activate either edition of Flash unless you want to select trial mode. Windows 98 SE users must have Microsoft Internet Explorer 5.1 or later in order to activate over the Internet. [¶] Note: Installing Macromedia Flash MX 2004 and Macromedia Flash MX Professional 2004 does not overwrite earlier Flash versions, such as Macromedia Flash MX, that you might have installed. [¶] To install Flash: [¶] 1. Close any running versions of Flash before installing. [¶] 2. Do one of the following to start the installation process: ■ (Windows) If you have a CD, insert it in your CD drive. A Flash movie clip plays that guides you through installation choices. Note: You can also run Install Flash MX 2004.exe to start the Flash movie clip, if necessary. ■ (Macintosh) If you have a CD, insert it in your CD drive and double-click the Installer icon. ■ If you have downloaded Flash from the Internet, double-click FlashMX2004Installer.exe (Windows), or double-click the Installer icon (Macintosh) and follow the onscreen instructions. [¶] 3. When installation is complete, follow the instructions to select the 30-day trial period, or enter your serial number and activate Flash. [*Flash MX Professional 2004 Flash Lite 1.1 Authoring Guidelines*, pp. 7–8] To create content for mobile phones, you must have the following items on your computer: [¶] • The latest version of Macromedia Flash MX Professional 2004 (7.0.1) [¶] • The new FlashLite1_1.dll (FlashLite1_1.dmg on the Mac) file for testing Flash applications in the Flash Lite 1.1 authoring environment [¶] • The new FlashLite1_1.xml file for publishing Flash Lite 1.1 SWF files [¶] • The DevicesMsg.cfg configuration file for customizing the features that are supported in Flash Lite 1.1. [¶] Installing the Flash MX Professional 2004 7.0.1 update [¶] To export Flash Lite 1.1 contents for mobile phones correctly, you need to have the latest version of Macromedia Flash MX Professional 2004 (7.0.1). You can download the updater program from the Macromedia website: www.macromedia.com/support/flash/downloads.html. [¶] Installing the FlashLite1_1.dll (FlashLite1_1.dmg on the Mac) file [¶] The FlashLite1_1.dll (FlashLite1_1 on the Mac) file is part of the Flash Lite 1.1 Authoring Updater. This DLL is to be used to test content when you

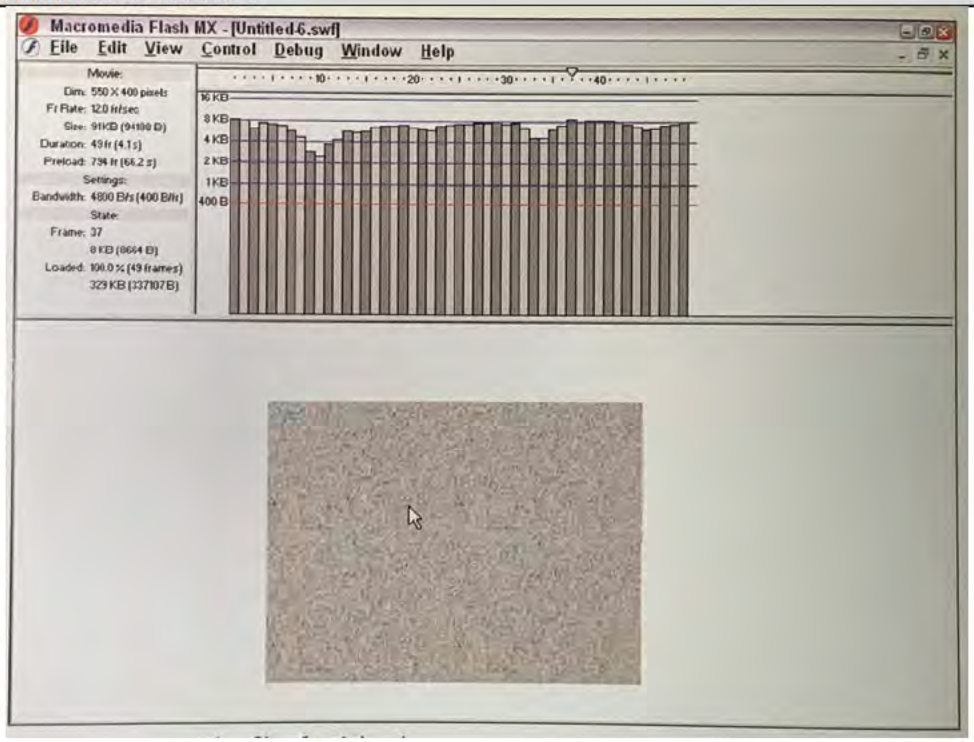
'864 Claim 1	Reference/Combination
	select Test Movie to validate your content. This new DLL is used when Flash Lite 1.1 is selected as the Flash version to publish to (using the publish setting interface). […] The Flash Lite 1.1 Test Movie command allows users to customize the features that are supported in Flash Player. From the Flash Lite 1.1 Authoring Updater, copy the DeviceMsg.cfg configuration file […] In addition, the Bandwidth Profiler in Flash MX Professional 2004 simulates via a profiler with multiple panels (one or more profile display windows). [*Flash MX 2004 Using Flash*, pp. 38–39] The Flash Player attempts to meet the frame rate you set; the actual frame rate during playback can vary on different computers. If a document that is downloading reaches a particular frame before the frame's required data has downloaded, the document pauses until the data arrives. [¶] To view downloading performance graphically, you can use the Bandwidth Profiler, which shows how much data is sent for each frame according to the modem speed you specify. The Bandwidth Profiler is divided into two panes. The left pane shows information about the document, the download settings, the state, and streams, if any are included. The right pane shows information about individual frames in the document. [¶] In simulating the downloading speed, Flash uses estimates of typical Internet performance, not the exact modem speed. For example, if you choose to simulate a modem speed of 28.8 Kbps, Flash sets the actual rate to 2.3 Kbps to reflect typical Internet performance. The profiler also compensates for the added compression support for SWF files, which reduces the file size and improves streaming performance. [¶] When external SWF files, GIF and XML files, and variables are streamed into a player by using ActionScript calls such as loadMovie and getUrl, the data flows at the rate set for streaming. The stream rate for the main SWF file is reduced based on the reduction of bandwidth caused by the additional data requests. It's helpful to test your document at each speed you intend to support, and on each computer you intend to support. This helps you ensure that the document doesn't overburden the slowest connection and computer it is designed for. [¶]

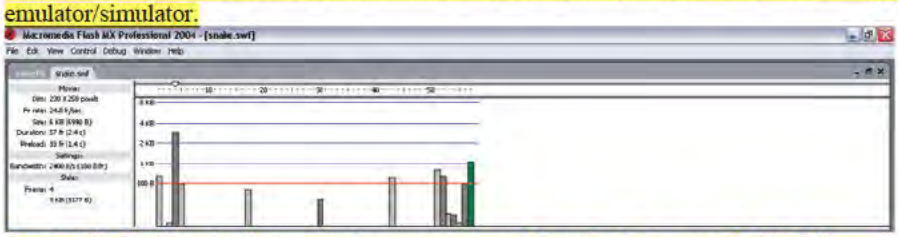
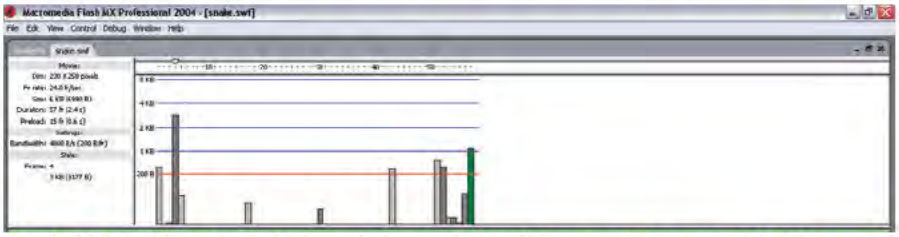
'864 Claim 1	Reference/Combination
	You can also generate a report of frames that are slowing playback, and then optimize or eliminate some of the content in those frames. See "Optimizing Flash documents" on page 36. [¶] To change the settings for the SWF file created using the Test Movie and Test Scene commands, use File > Publish Settings. See "Publishing Flash documents" on page 281. [¶] To test download performance: [¶] Do one of the following: [¶] Select Control > Test Scene or Control > Test Movie. [¶] If you test a scene or document, Flash publishes the current selection as a SWF file using the settings in the Publish Settings dialog box. (See "Publishing Flash documents" on page 281.) The SWF file opens in a new window and begins playing immediately. [¶] Select File > Open, and select a SWF file. [¶] Select View > Download Settings, and select a download speed to determine the streaming rate that Flash simulates: 14.4 Kbps, 28.8 Kbps, 56 Kbps, DSL, T1 or a User Setting. To enter your your own User Setting, select Customize. [¶] When viewing the SWF file, select View > Bandwidth Profiler to display a graph of the downloading performance. [¶] The left side of the profiler displays information about the document, its settings, its state, and streams, if any are included in the document. [¶] The right section of the profiler shows the Timeline header and graph. In the graph, each bar represents an individual frame of the document. The size of the bar corresponds to that frame's size in bytes. The red line beneath the Timeline header indicates whether a given frame streams in real time with the current modem speed set in the Control menu. If a bar extends above the red line, the document must wait for that frame to load. [¶] Select View > Simulate Download to turn streaming off or on. [¶] If you turn streaming off, the document starts over without simulating a web connection. [¶] Click a bar on the graph to display settings for the corresponding frame in the left window and stop the document. [¶] If necessary, adjust the view of the graph: [¶] Select View > Streaming Graph to show which frames cause pauses. This default view displays alternating light and dark gray blocks representing each frame. The side of

'864 Claim 1	Reference/Combination
	each block indicates its relative byte size. The first frame stores a symbol's contents, so it is often larger than other frames. [¶] Select View > Frame by Frame Graph to display the size of each frame. This view helps you see which frames contribute to streaming delays. If any frame block extends above the red line in the graph, the Flash Player halts playback until the entire frame downloads. [¶] Close the test window to return to the normal authoring environment. [¶] Once you've set up a test environment incorporating the Bandwidth Profiler, you can open any SWF file directly in test mode. The file opens in a Flash Player window, using the Bandwidth Profiler and other selected viewing options. [¶] For more information on debugging your documents, see "Writing and Debugging Scripts" in ActionScript Reference Guide Help. [¶] To generate a report listing the amount of data in the final Flash Player file: [¶] Select File > Publish Settings and click the Flash tab. [¶] Select Generate Size Report. [¶] Click Publish. [¶] Flash generates a text file with the extension .txt. (If the document file is myMovie.fla, the text file is myMovie Report.txt.) The report lists the size of each frame, shape, text, sound, video and ActionScript script by frame. [*Flash MX 2004 Using Flash*, p. 390] In addition, Flash files are compact, making them perfect for wireless carrier networks, where transfer rates range between 9.6 and 60 kilobytes per second (Kbps). Mobile devices, unlike desktop computers, have limited storage capability, so the small footprint of Flash is ideal. David discloses, via screenshots, the appearance of the Bandwidth Profiler. [David, p. 7]

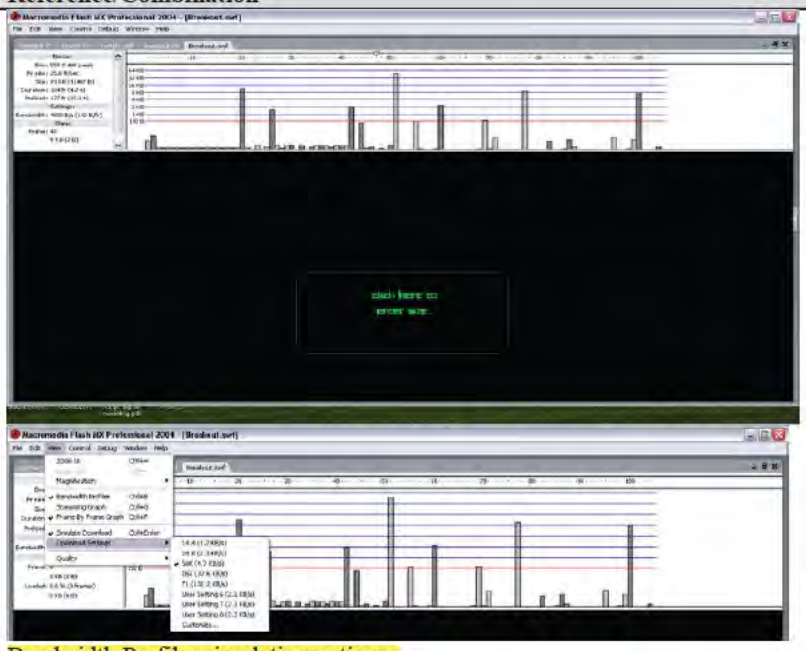
'864 Claim 1	Reference/Combination
	 [David, p. 98]

'864 Claim 1	Reference/Combination
	 [David, #18 of 32 unnumbered pages between pages numbered 192 and 193]

'864 Claim 1	Reference/Combination
	 To the extent this limitation is not explicitly disclosed by the Flash MX Professional 2004 system, it is inherent or would have been obvious to a POSA from the teachings of the Flash MX Professional 2004 system, the knowledge of a POSA, and/or one or more of the references identified in JPMC's Invalidity Contentions.

'864 Claim 1	Reference/Combination
1[b][2] a plurality of network characteristics indicative of performance of the mobile device when executing the application;	The Flash MX Professional 2004 system discloses this limitation. For example, the Bandwidth Profiler simulates network characteristics while the Flash application runs in the emulator/simulator.  Bandwidth Profiler simulating a web connection and download at a speed of 28.8 kbps.  Bandwidth Profiler simulating a web connection and download at a speed of 56 kbps. Screenshots above from the Flash MX Professional 2004 emulator show a plurality of network characteristics, including "Bandwidth" and the amount of time needed for "Preload" for snake.swf.

'864 Claim 1	Reference/Combination



Bandwidth Profiler simulation options.

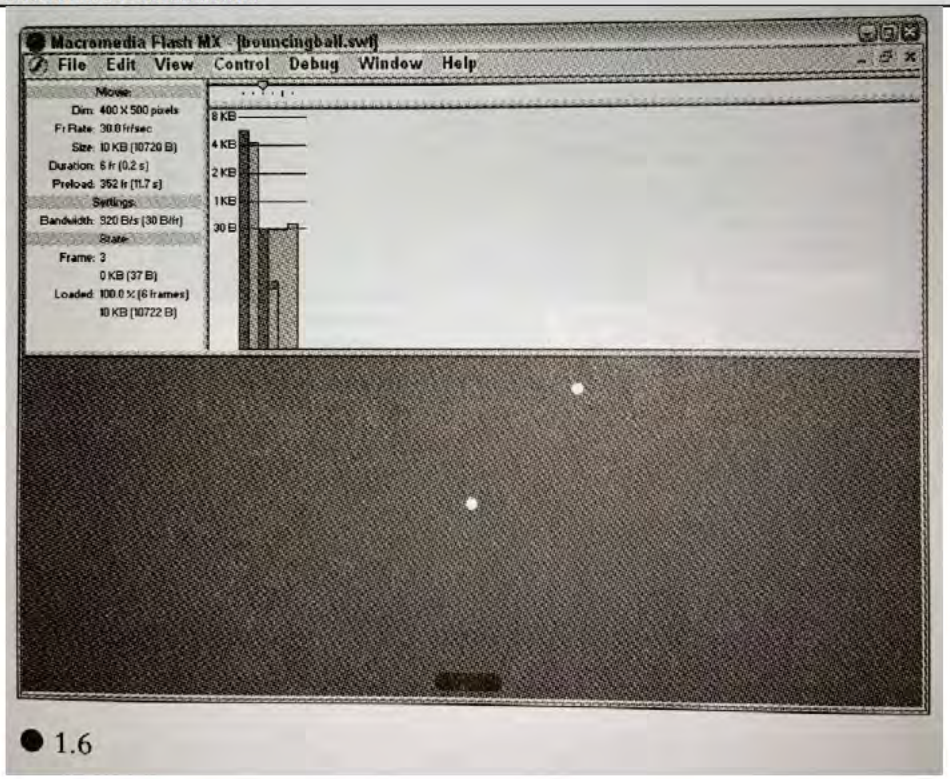
For example, the Bandwidth Profiler in Flash MX Professional 2004 simulates a download, modem speed, a web connection (a network connection state), compression, streams, typical Internet performance (bandwidth), and additional data requests, indicative of performance of the mobile device when executing the Flash application.

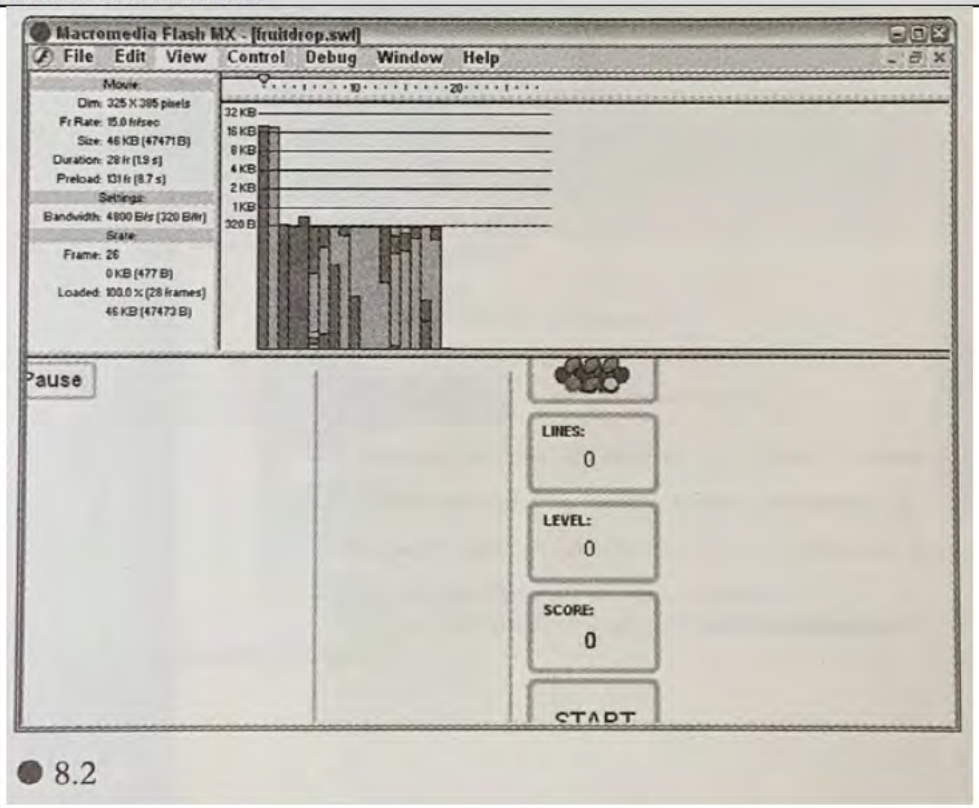
[*Flash MX 2004 Using Flash*, pp. 38–39]

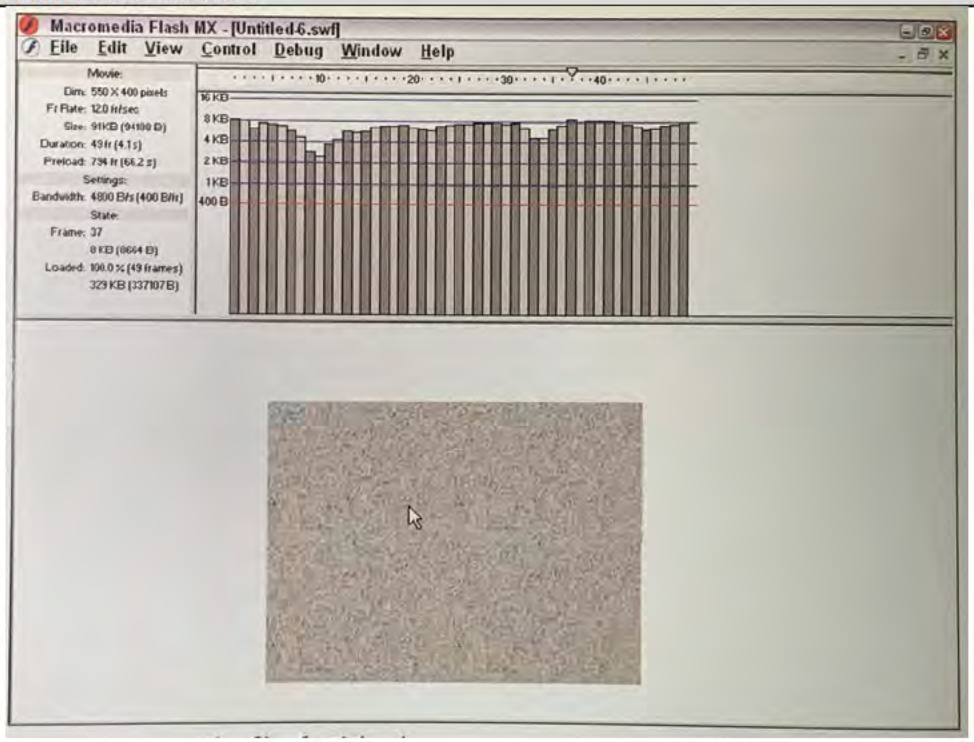
'864 Claim 1	Reference/Combination
	The Flash Player attempts to meet the frame rate you set; the actual frame rate during playback can vary on different computers. If a document that is downloading reaches a particular frame before the frame's required data has downloaded, the document pauses until the data arrives. [¶] To view downloading performance graphically, you can use the Bandwidth Profiler, which shows how much data is sent for each frame according to the modem speed you specify. The Bandwidth Profiler is divided into two panes. The left pane shows information about the document, the download settings, the state, and streams, if any are included. The right pane shows information about individual frames in the document. [¶] In simulating the downloading speed, Flash uses estimates of typical Internet performance, not the exact modem speed. For example, if you choose to simulate a modem speed of 28.8 Kbps, Flash sets the actual rate to 2.3 Kbps to reflect typical Internet performance. The profiler also compensates for the added compression support for SWF files, which reduces the file size and improves streaming performance. [¶] When external SWF files, GIF and XML files, and variables are streamed into a player by using ActionScript calls such as loadMovie and getUrl, the data flows at the rate set for streaming. The stream rate for the main SWF file is reduced based on the reduction of bandwidth caused by the additional data requests. It's helpful to test your document at each speed you intend to support, and on each computer you intend to support. This helps you ensure that the document doesn't overburden the slowest connection and computer it is designed for. [¶] You can also generate a report of frames that are slowing playback, and then optimize or eliminate some of the content in those frames. See "Optimizing Flash documents" on page 36. [¶] To change the settings for the SWF file created using the Test Movie and Test Scene commands, use File > Publish Settings. See "Publishing Flash documents" on page 281. [¶] To test download performance: [¶] Do one of the following: [¶] Select Control > Test Scene or Control > Test Movie. [¶] If you test a scene or document, Flash publishes the current selection as a SWF file using the settings in the Publish Settings dialog box. (See "Publishing Flash documents" on page 281.) The SWF file opens in a new window and begins playing immediately. [¶] Select File > Open, and select a SWF file. [¶]

'864 Claim 1	Reference/Combination
	Select View > Download Settings, and select a download speed to determine the streaming rate that Flash simulates: 14.4 Kbps, 28.8 Kbps, 56 Kbps, DSL, T1 or a User Setting. To enter your your own User Setting, select Customize. [¶] When viewing the SWF file, select View > Bandwidth Profiler to display a graph of the downloading performance. [¶] The left side of the profiler displays information about the document, its settings, its state, and streams, if any are included in the document. [¶] The right section of the profiler shows the Timeline header and graph. In the graph, each bar represents an individual frame of the document. The size of the bar corresponds to that frame's size in bytes. The red line beneath the Timeline header indicates whether a given frame streams in real time with the current modem speed set in the Control menu. If a bar extends above the red line, the document must wait for that frame to load. [¶] Select View > Simulate Download to turn streaming off or on. [¶] If you turn streaming off, the document starts over without simulating a web connection. [¶] Click a bar on the graph to display settings for the corresponding frame in the left window and stop the document. [¶] If necessary, adjust the view of the graph: [¶] Select View > Streaming Graph to show which frames cause pauses. This default view displays alternating light and dark gray blocks representing each frame. The side of each block indicates its relative byte size. The first frame stores a symbol's contents, so it is often larger than other frames. [¶] Select View > Frame by Frame Graph to display the size of each frame. This view helps you see which frames contribute to streaming delays. If any frame block extends above the red line in the graph, the Flash Player halts playback until the entire frame downloads. [¶] Close the test window to return to the normal authoring environment. [¶] Once you've set up a test environment incorporating the Bandwidth Profiler, you can open any SWF file directly in test mode. The file opens in a Flash Player window, using the Bandwidth Profiler and other selected viewing options. [¶] For more information on debugging your documents, see "Writing and Debugging Scripts" in ActionScript Reference Guide Help. [¶]

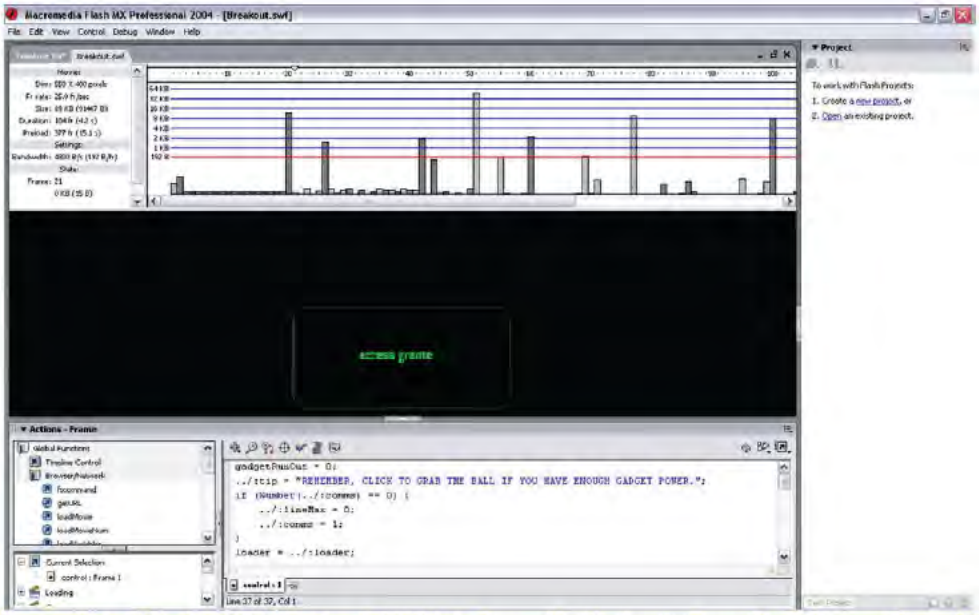
'864 Claim 1	Reference/Combination
	To generate a report listing the amount of data in the final Flash Player file: [¶] Select File > Publish Settings and click the Flash tab. [¶] Select Generate Size Report. [¶] Click Publish. [¶] Flash generates a text file with the extension .txt. (If the document file is myMovie.fla, the text file is myMovie Report.txt.) The report lists the size of each frame, shape, text, sound, video and ActionScript script by frame. [*Flash MX 2004 Using Flash*, p. 390] In addition, Flash files are compact, making them perfect for wireless carrier networks, where transfer rates range between 9.6 and 60 kilobytes per second (Kbps). Mobile devices, unlike desktop computers, have limited storage capability, so the small footprint of Flash is ideal. David discloses, via screenshots, the appearance of the Bandwidth Profiler. [David, p. 7]

'864 Claim 1	Reference/Combination
	 [David, p. 98]

'864 Claim 1	Reference/Combination
	 [David, #18 of 32 unnumbered pages between pages numbered 192 and 193]

'864 Claim 1	Reference/Combination
	 To the extent this limitation is not explicitly disclosed by the Flash MX Professional 2004 system, it is inherent or would have been obvious to a POSA from the teachings of the Flash MX Professional 2004 system, the knowledge of a POSA, and/or one or more of the references identified in JPMC's Invalidity Contentions.

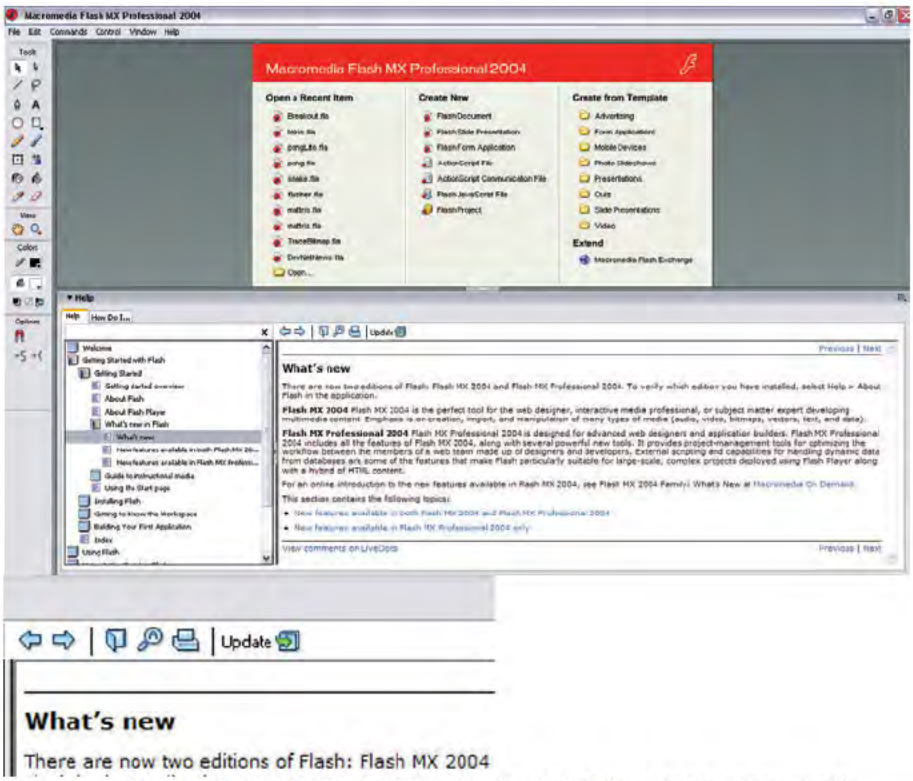
'864 Claim 1	Reference/Combination
1[c] wherein the network characteristics are based on data of interaction with networks in non-simulated environments.	The Flash MX Professional 2004 system discloses this limitation. For example, the Bandwidth Profiler in Flash MX Professional 2004 simulates a download, modem speed, a web connection (a network connection state), compression, streams, typical Internet performance (bandwidth), and additional data requests, indicative of performance of the mobile device when executing the Flash application. Simulating these network characteristics is based on data of interaction with networks in non-simulated environments. See disclosures for claim limitation 1[b][2] (hereby incorporated by reference). Simulating Internet performance is based on data of interaction with networks in non-simulated environments. To the extent this limitation is not explicitly disclosed by the Flash MX Professional 2004 system, it is inherent or would have been obvious to a POSA from the teachings of the Flash MX Professional 2004 system, the knowledge of a POSA, and/or one or more of the references identified in JPMC's Invalidity Contentions.

'864 Claim 8	Reference/Combination
8[a] The system of claim 1, wherein the software is further configured to create one or more scenarios that include scripts that impact either the performance of the application, or the network, or both.	The Flash MX Professional 2004 system discloses this limitation. For example, Flash MX Professional 2004 supports creating scenes (scenarios) that include ActionScript (scripts).  Screenshot of Flash MX Professional 2004 interface with "Actions – Frame" window configured to create one or more scenarios that include scripts that impact either the performance of the application, or the network, or both.

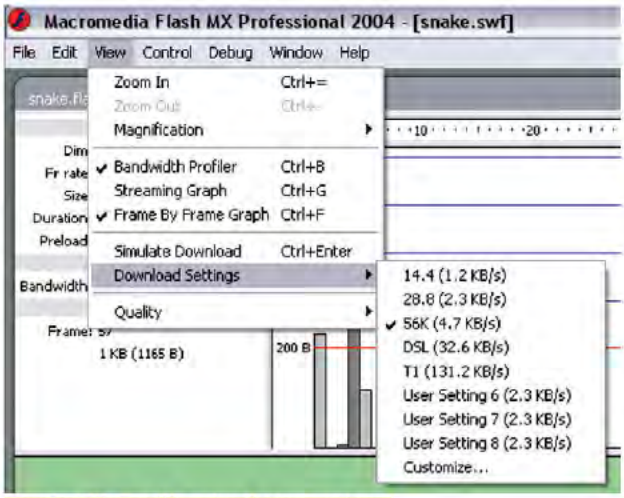
'864 Claim 8	Reference/Combination
	For example, the manual discloses that Flash MX Professional 2004 supports creating scenes (scenarios) that include ActionScript (scripts). [*Flash MX 2004 Using Flash*, p. 23] Working with scenes [¶] To organize a document thematically, you can use scenes. For example, you might use separate scenes for an introduction, a loading message, and credits. [¶] Note: You cannot use scenes in a screen-based document. For information on screens, see Chapter 12, "Working with Screens (Flash Professional Only)," on page 197. [¶] When you publish a Flash document that contains more than one scene, the scenes in the document play back in the order they are listed in the Scene panel in the Flash document. Frames in the document are numbered consecutively through scenes. For example, if a document contains two scenes with ten frames each, the frames in Scene 2 are numbered 11–20. [¶] You can add, delete, duplicate, rename, and change the order of scenes. [¶] To stop or pause a document after each scene, or to let users navigate the document in a nonlinear fashion, you use actions. See "ActionScript Basics" in ActionScript Reference Guide Help. [¶] To display the Scene panel: • Select Window > Design Panels > Scene. [¶] To view a particular scene: • Select View > Go To and then select the name of the scene from the submenu. [¶] To add a scene, do one of the following: • Click the Add Scene button in the Scene panel. • Select Insert > Scene.

'864 Claim 8	Reference/Combination
	ActionScript adds complex interactivity, playback control, and data display, and can store and retrieve information, and thereby impacts the performance of the application. ActionScript also has networking capabilities, such as by calling loadMovie and getUrl, so it can also impact the performance of the network. [*Flash MX 2004 Using Flash*, p. 18] ActionScript is the Flash scripting language that enables you to add complex interactivity, playback control, and data display to a Flash document. You can add ActionScript within the Flash authoring environment using the Actions panel, or create external ActionScript files using an external editor. [¶] You don't need to understand every ActionScript element to begin scripting; if you have a clear goal, you can start building scripts with simple actions. You can incorporate new elements of the language as you learn them to accomplish more complicated tasks. [¶] Like other scripting languages, ActionScript follows its own rules of syntax, reserves keywords, provides operators, and allows you to use variables to store and retrieve information. ActionScript includes built-in objects and functions and allows you to create your own objects and functions. For more information on ActionScript, see "ActionScript Basics" in ActionScript Reference Guide Help. [*Flash MX 2004 Using Flash*, p. 38] When external SWF files, GIF and XML files, and variables are streamed into a player by using ActionScript calls such as loadMovie and getUrl, the data flows at the rate set for streaming. The stream rate for the main SWF file is reduced based on the reduction of bandwidth caused by the additional data requests. To the extent this limitation is not explicitly disclosed by the Flash MX Professional 2004 system, it is inherent or would have been obvious to a POSA from the teachings of the Flash MX Professional 2004 system, the knowledge of a POSA, and/or one or more of the references identified in JPMC's Invalidity Contentions.

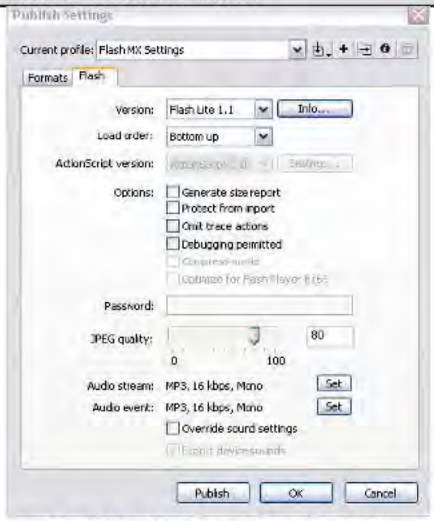
'864 Claim 13	Reference/Combination
13[a] The system of claim 1, wherein the software is further configured to display data graphically which is configured to enable a user to identify either application performance, or network performance, or both.	The Flash MX Professional 2004 system discloses this limitation. For example, the Bandwidth Profiler displays bandwidth data graphically and includes features such as a bar chart and a red line that enable a user to identify whether the application can download without pausing (application performance, or network performance, or both). See disclosures for claim limitation 1[b][1] (hereby incorporated by reference). To the extent this limitation is not explicitly disclosed by the Flash MX Professional 2004 system, it is inherent or would have been obvious to a POSA from the teachings of the Flash MX Professional 2004 system, the knowledge of a POSA, and/or one or more of the references identified in JPMC's Invalidity Contentions.

'864 Claim 14	Reference/Combination
14[a] The system of claim 1, wherein the software is further configured to interact with a network to enable a user to update the software.	The Flash MX Professional 2004 system discloses this limitation.  There is an "Update" button in Flash MX Professional 2004 (see above enlargement).

'864 Claim 14	Reference/Combination
	For example, the manual describes the steps a user can take to interact with the Internet (a network) in order to update the Flash software. [*Flash MX 2004 Getting Started with Flash*, p. 10] Updating the Help panel [¶] The Update feature allows you to update your help system with new and revised documentation, including procedures and lessons. You can click the Update button to see if new information is available. Additionally, if you see a topic in help with the text "For the latest information about this topic, click the Update button at the top of the Help tab," you can click this button to update Flash Help. [¶] To update Flash Help: 1 Verify that you're connected to the Internet. 2 Click the Update button in the Help panel toolbar and follow instructions to download the help system. In addition, the manual discloses that Flash MX Professional 2004 is software. See disclosures for claim limitation 1[b][1] (hereby incorporated by reference). To the extent this limitation is not explicitly disclosed by the Flash MX Professional 2004 system, it is inherent or would have been obvious to a POSA from the teachings of the Flash MX Professional 2004 system, the knowledge of a POSA, and/or one or more of the references identified in JPMC's Invalidity Contentions.

'864 Claim 17	Reference/Combination
17[a] The system of claim 1, wherein the software is further configured to enable a user to select from one or more network characteristics for testing how well mobile content performs on the mobile device.	The Flash MX Professional 2004 system discloses this limitation.  Bandwidth Profiler simulation options.

'864 Claim 17	Reference/Combination



Flash MX Professional 2004 Publish Settings, including compression settings.

For example, the Bandwidth Profiler in Flash MX Professional 2004 enables a user to select from one or more network characteristics for testing how well mobile content performs on the mobile device, including modem speeds, compression, streams, and load order.

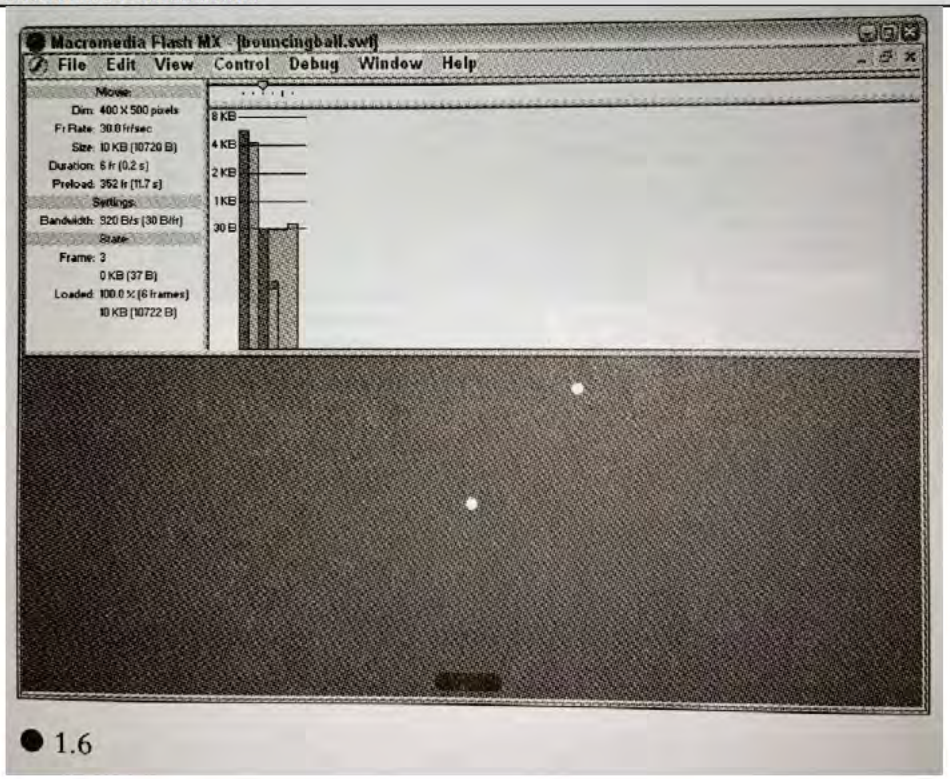
[*Flash MX 2004 Using Flash*, pp. 36–37]
As your document file size increases, so does its download time and playback speed. You can take a number of steps to prepare your document for optimal playback. As part of the publishing process, Flash automatically performs some optimization on documents: for example, it detects duplicate shapes on export and places them in the file only once, and it converts nested groups into single groups. [¶]

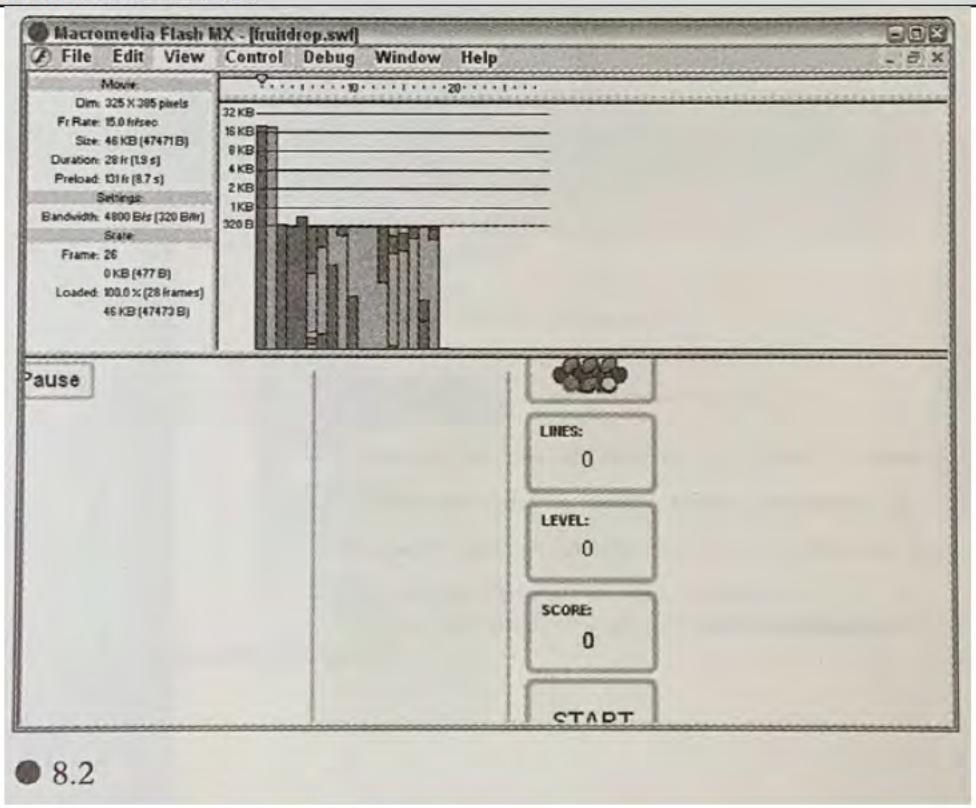
'864 Claim 17	Reference/Combination
	Before exporting a document, you can optimize it further by using various strategies to reduce the file size. You can also compress a SWF file as you publish it. (See Chapter 15, "Publishing," on page 279.) As you make changes, it's a good idea to test your document by running it on a variety of different computers, operating systems, and Internet connections. [*Flash MX 2004 Using Flash*, pp. 38–39] The Flash Player attempts to meet the frame rate you set; the actual frame rate during playback can vary on different computers. If a document that is downloading reaches a particular frame before the frame's required data has downloaded, the document pauses until the data arrives. [¶] To view downloading performance graphically, you can use the Bandwidth Profiler, which shows how much data is sent for each frame according to the modem speed you specify. The Bandwidth Profiler is divided into two panes. The left pane shows information about the document, the download settings, the state, and streams, if any are included. The right pane shows information about individual frames in the document. [¶] In simulating the downloading speed, Flash uses estimates of typical Internet performance, not the exact modem speed. For example, if you choose to simulate a modem speed of 28.8 Kbps, Flash sets the actual rate to 2.3 Kbps to reflect typical Internet performance. The profiler also compensates for the added compression support for SWF files, which reduces the file size and improves streaming performance. [¶] When external SWF files, GIF and XML files, and variables are streamed into a player by using ActionScript calls such as loadMovie and getUrl, the data flows at the rate set for streaming. The stream rate for the main SWF file is reduced based on the reduction of bandwidth caused by the additional data requests. It's helpful to test your document at each speed you intend to support, and on each computer you intend to support. This helps you ensure that the document doesn't overburden the slowest connection and computer it is designed for. [¶] You can also generate a report of frames that are slowing playback, and then optimize or eliminate some of the content in those frames. See "Optimizing Flash documents" on page 36. [¶]

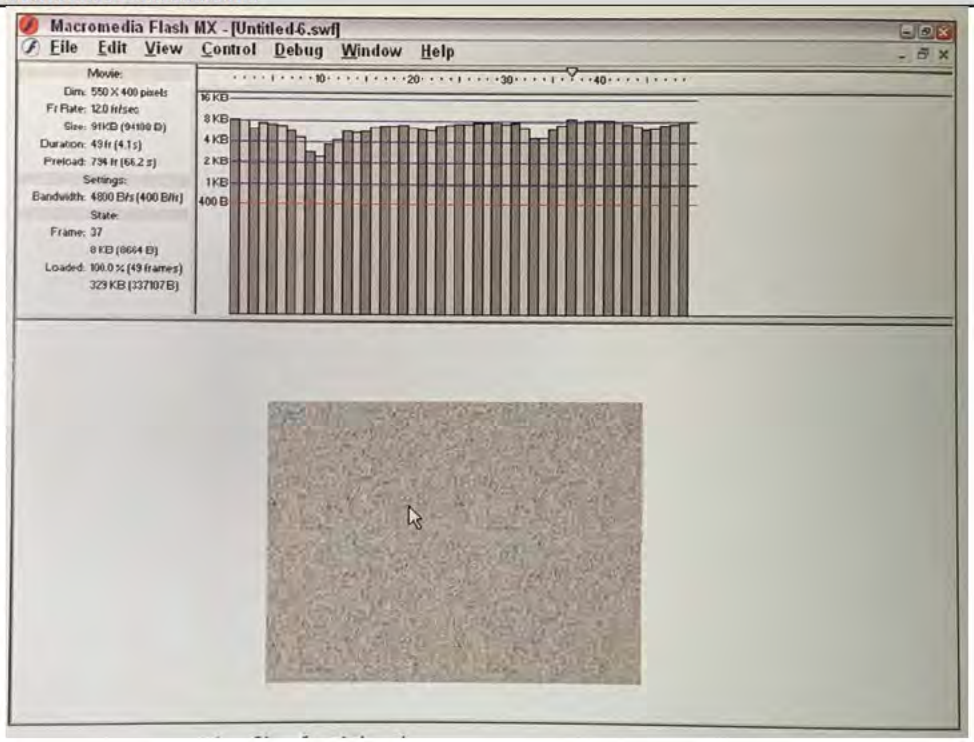
'864 Claim 17	Reference/Combination
	To change the settings for the SWF file created using the Test Movie and Test Scene commands, use File > Publish Settings. See "Publishing Flash documents" on page 281. [¶] To test download performance: [¶] Do one of the following: [¶] Select Control > Test Scene or Control > Test Movie. [¶] If you test a scene or document, Flash publishes the current selection as a SWF file using the settings in the Publish Settings dialog box. (See "Publishing Flash documents" on page 281.) The SWF file opens in a new window and begins playing immediately. [¶] Select File > Open, and select a SWF file. [¶] Select View > Download Settings, and select a download speed to determine the streaming rate that Flash simulates: 14.4 Kbps, 28.8 Kbps, 56 Kbps, DSL, T1 or a User Setting. To enter your your own User Setting, select Customize. [¶] When viewing the SWF file, select View > Bandwidth Profiler to display a graph of the downloading performance. [¶] The left side of the profiler displays information about the document, its settings, its state, and streams, if any are included in the document. [¶] The right section of the profiler shows the Timeline header and graph. In the graph, each bar represents an individual frame of the document. The size of the bar corresponds to that frame's size in bytes. The red line beneath the Timeline header indicates whether a given frame streams in real time with the current modem speed set in the Control menu. If a bar extends above the red line, the document must wait for that frame to load. [¶] Select View > Simulate Download to turn streaming off or on. [¶] If you turn streaming off, the document starts over without simulating a web connection. [¶] Click a bar on the graph to display settings for the corresponding frame in the left window and stop the document. [¶] If necessary, adjust the view of the graph: [¶] Select View > Streaming Graph to show which frames cause pauses. This default view displays alternating light and dark gray blocks representing each frame. The side of each block indicates its relative byte size. The first frame stores a symbol's contents, so it is often larger than other frames. [¶] Select View > Frame by Frame Graph to display the size of each frame. This view helps you see which frames contribute to streaming delays. If any frame block extends above the red line in the graph, the Flash Player halts playback until the entire frame downloads. [¶]

'864 Claim 17	Reference/Combination
	Close the test window to return to the normal authoring environment. [¶] Once you've set up a test environment incorporating the Bandwidth Profiler, you can open any SWF file directly in test mode. The file opens in a Flash Player window, using the Bandwidth Profiler and other selected viewing options. [¶] For more information on debugging your documents, see "Writing and Debugging Scripts" in ActionScript Reference Guide Help. [¶] To generate a report listing the amount of data in the final Flash Player file: [¶] Select File > Publish Settings and click the Flash tab. [¶] Select Generate Size Report. [¶] Click Publish. [¶] Flash generates a text file with the extension .txt. (If the document file is myMovie.fla, the text file is myMovie Report.txt.) The report lists the size of each frame, shape, text, sound, video and ActionScript script by frame. [*Flash MX 2004 Using Flash*, pp. 282–283] Setting publish options for the Flash SWF file format [¶] When publishing a Flash document, you can set image and sound compression options, and an option to protect your SWF file from being imported. You use the controls in the Flash panel of the Publish Settings dialog box to change the settings. […] Select a load order to specify how Flash loads a SWF file's layers for displaying the first frame of your SWF file: Bottom Up or Top Down. [¶] This option controls which parts of the SWF file Flash draws first over a slow network or modem connection. […] Compress movie compresses the SWF file to reduce file size and download time. This option is selected by default and is most beneficial when a file is text-intensive or includes a lot of ActionScript. A compressed file plays only in Flash Player 6 or later. […] To control bitmap compression, adjust the JPEG Quality slider or enter a value. [¶] Lower image quality produces smaller files; higher image quality produces larger files. Try different settings to determine the best trade-off between size and quality; 100 provides the highest quality and least compression. [¶]

'864 Claim 17	Reference/Combination
	8 To set the sample rate and compression for all streaming sounds or event sounds in the SWF file, click the Set button next to Audio Stream or Audio Event and select options for Compression, Bit Rate, and Quality in the Sound Settings dialog box. Click OK when you are finished. [*Flash MX 2004 Using Flash*, p. 390] In addition, Flash files are compact, making them perfect for wireless carrier networks, where transfer rates range between 9.6 and 60 kilobytes per second (Kbps). Mobile devices, unlike desktop computers, have limited storage capability, so the small footprint of Flash is ideal. David discloses, via screenshots, the appearance of the Bandwidth Profiler. [David, p. 7]

'864 Claim 17	Reference/Combination
	 [David, p. 98]

'864 Claim 17	Reference/Combination
	 [David, #18 of 32 unnumbered pages between pages numbered 192 and 193]

'864 Claim 17	Reference/Combination
	 To the extent this limitation is not explicitly disclosed by the Flash MX Professional 2004 system, it is inherent or would have been obvious to a POSA from the teachings of the Flash MX Professional 2004 system, the knowledge of a POSA, and/or one or more of the references identified in JPMC's Invalidity Contentions.

'864 Claim 17	Reference/Combination